ENTRAK

The Cooler way.

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ENTRAK

[ventilationVest]

the personal climate system by ENTRAK

The Cooler way.

CE

Operating Instructions English

[11] Declaration of conformity

EG declaration of conformity

The company ENTRAK GmbH & Co. KG, Richtweg 33, 90530 Wendelstein, Germany hereby certifies on its sole responsibility that the **[ventilationVest]** product system with ventilation unit C12-0025 in its delivered version meets the European guideline 2004/108/EG regarding electronic magnetic compatibility.

The following harmonized standards were applied for conformity analysis:

EN 61000-6-2:2005
- Electromagnetic compatibility (EMC)
- Part 6-2: Generic standards
- Immunity testing in industrial areas

EN 61000-6-3:2007
- Electromagnetic compatibility (EMC)
- Part 6-3: Generic standards
- Emitted interference for residential, business and commercial areas as well as small industry

EN 60335-2-80: 2003 + A1: 2004
- Safety for household and similar electrical appliances

Wendelstein, July 26, 2007

(Sebastian Heinz Pohr, Executive Board)

[10] Manufacturer data

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Introduction

Dear customer,

Thank you for the trust you have put into this product. We manufacture our products to meet the highest standards of quality. Your comments and wishes are always welcome, and are an important part of our new product development. To help ensure that your use of the **[ventilationVest]** is a pleasant one, we recommend that you review these instructions carefully. The **[ventilationVest]** must be used properly for the ventilation to achieve its full effect.
Any protected company names and depictions of products included in these instructions are the trademarks of their respected owners, with all rights reserved.

[1] Safety Instructions

1.1 General safety instructions

Please make certain that you understand all safety warnings and instructions. Should you pass the vest on to a third party, please be certain to pass along the instruction manual as well. These operating instructions should ideally be kept close at hand in the event that they are needed!

No liability can be assumed for damages to persons or property caused by improper usage of the system or non-adherence to the operating instructions. In such cases all warrantee claims are void!

- Use and handle the components appropriately and for the purposes described in these instructions.
- Repairs to the ventilation units and the charging set may only be undertaken by authorized professionals or by the manufacturer.
- Use only genuine – replacement or original – accessories.
- Never use force when working with the ventilation units.
- The ventilation unit has been EMC tested by HERBERG Service Plus GmbH and fulfills the requirements of the applicable European guidelines. CE conformity has been certified. Please strictly observe the operating instructions on this point! That is the only way to maintain safe conditions and ensure danger-free operation.
- For security reasons (CE) any reconfiguration and/or modifications of the product or parts of the product is prohibited.
- Use components only if they are completely intact. Suspend use of the ventilation units or the charging device if any visible damages are observed.
- Never submerge the ventilation units or the charging device into water or other fluids.

[9] Technical data

a) Vest

Available sizes	S, M, L, XL, XXL, XXXL
Outer material	100% Polyester
3D mesh	100% Polyester
Weight (without ventilation units)	From approx. 700g / 1.54 lbs (size S) to approx. 1000g / 2.2 lbs (size XXXL)
Standard color	Blue

b) Ventilation unit

Dimensions (L x W x H)	144 mm (5.67”) x 97 mm (3.82”) x 29 mm (1.14”)
Weight	280g / 0.62 lbs per unit
Power supply	Lithium-Ion rechargeable batteries, 3 cell, cell type 18650
Operating voltage	12.6V – 9V, depending on charge level
Protective function	Automatic switch off when battery voltage hits 9V Protective electronics against overcharging
Battery life	Approx. 2.5 – 3 hours
Fan power	3.5 W
Air flow volume	Approx 200l/min (7.14 ft^3) when used with one ventilation unit (12V) Approx 400l/min (14.28 ft^3) when used with two ventilation units (12V)
Service length	Up to 9 hours (new batteries)
Noise levels	Approx. 40 dB (A)
Storage	Dry environment, ideal for 15°C / 59°F - 20°C / 68°F and approx 40% charging capacity

c) Charging Device

Country-specific versions due to different plug systems.
For technical data, see type plate on charging device

[7] Disposal notes

7.1 Valid only for countries in the EU

- The **[ventilationVest]** without its ventilation units can be placed into the normal household rubbish or donated to charitable clothing drives.
- The ventilation units and charging device may not be disposed of with the household trash. Please contact your dealer for information on disposing of these products.
  Your dealer will have more information on proper disposal for your location.
- When disposing of packing materials, please observe the regulations applicable to your country.

7.2 Other countries

When disposing of the **[ventilationVest]**, ventilation unit, charging device and packing materials, please observe the applicable regulations for your country.

[8] Guarantee / Limitation of liability

In the event of a complaint, please contact the dealer from whom you purchased the **[ventilationVest]** system. Please always include the purchase receipt. The claim to warrantee is void if unauthorized work has been undertaken on the system's components or if non-OEM replacement parts have been used.

The claim to warrantee is also void for damages caused by non-adherence to these operating instructions. The manufacturer assumes no liability for subsequent damages!

The manufacturer assumes no liability for damages to property or persons caused by improper use or non-adherence to the safety warnings / operating instructions. In such cases all guarantee claims are void!

- Should fluid manage to penetrate into the ventilation unit and cause a disruption in functionality, switch the device off immediately and allow it to dry out completely. If it continues to malfunction, then send the device to the dealer's repair service for resolution of the problem.
- Protect the ventilation units against dirt build-up. Dirt can lead to blocking of the air pathways and to a blockage of the fans. This in turn can cause damage to the device.
- Clean the ventilation units following each use (see also Chap. 6 / Cleaning).
- Avoid any contact between the ventilation units and solvents, fuels, oils and greases, as well as aggressive cleaners and alcohol. To avoid damages, never store the devices together with the aforementioned substances.
- Always wear an article of clothing beneath the vest (see also Chap. 4.1 / Putting on the Vest).
- Under no conditions should you operate the **[ventilationVest]** in environments with the threat of explosion.
- Do not use the **[ventilationVest]** in areas with flying sparks.
- Avoid operation of the **[ventilationVest]** in extremely smoky or dusty environments.
- Do not use the **[ventilationVest]** in an atmosphere with hot or corrosive gases or vapors.
- The **[ventilationVest]** system is not PPE (**P**ersonal **P**rotective **E**quipment) and is therefore not certified based on the PPE guidelines.

1.2 Safety warnings about charging and the charging device

- Charging devices may only be operated on AC power corresponding with the information on the type plate.
- The charging process should never be undertaken in areas with the threat of explosion!
- The charging device should never be used when dirty or wet.
- Never plug or unplug the charging device with wet hands.
- The charging device may not come in contact with liquids. For these reasons, protect the charging device from moisture and store in a dry place.
- The charging device is only suitable for indoor use.
- Where required, use only an appropriate extension cord. Lay the cable such that it does not represent a tripping danger and such that the cable cannot be crimped. Check the cable regularly and replace if damaged.
- Never carry the charging device by the cord.
- Do not cover up the charging device and ensure that it has sufficient ventilation to avoid overheating the charging device.
- All electrical parts and auxiliary units must be checked regularly for defects or wear-and-tear. Damages to cables, plugs or other parts represent a security risk.
- Do not continue use of damaged or defective charging devices. In the event of damages, replace the charging device with a charging device of the same type.

- Do not open the charging device. Repairs should only be executed by the dealer's service department.
- The charging device for the **[ventilationVest]** should only be used to charge ENTRAK ventilation units. Other rechargeable batteries, devices or non-rechargeable batteries should not be charged using the charging device.
- Protect the charging device from oils, greases, fuels, alcohols, aggressive cleaners and solvents, etc, as these can destroy the casing.
- Do not grasp anything except the casing when separate the charging device from the AC power; do not ever pull on the charging cable.
- Extension cords with multiple plugs and simultaneous operation of several devices should be avoided.
- Never manipulate the charging device (short circuit danger).
- Keep the charging device away from children.

1.3 Security warnings for the ventilation units

The ventilation units have non-accessible rechargeable Lithium-Ion batteries. For this reason, the following warnings must be strictly followed.

- Recharge ventilation units only with the original charging device.
- When charging, observe all warnings in Chap. 1.2.
- Discontinue use of damaged ventilation units.
- Damaged ventilation units should be repaired only by the dealer's repair service or replaced by new models.
- Ensure that the ventilation units are not exposed to temperatures above 45°C / 126°F during charging or above 60°C / 140°F during use. The rechargeable battery represents an explosive threat!
- Do not disassembly the ventilation unit, and especially not its battery!

1.4 General safety warnings for Lithium-Ion Batteries

- Do not heat or burn batteries. Explosive hazard!
- Do not disassemble or break batteries!
- Do not short-circuit batteries!
- Do not ever connect batteries to impermissible energy sources!
- Do not submerse batteries in fluids! The battery can become damaged.
- Batteries should only be recharged with the respective approved charging device.
- Leaking or damaged batteries can cause chemical burns to the skin. Appropriate gloves must therefore be used in such cases.
- Never adapt the shape of the battery packs.
- Discontinue use of damaged batteries.
- Used rechargeable batteries should be disposed of in accordance with your local regulations.

[6] Cleaning and care

6.1 Cleaning the vest

The **[ventilationVest]** can be washed like other articles of work clothing. Follow the instructions on the care label contained within the vest. All zippers should be closed during washing.
The ventilation units must always be removed from the vest pockets prior to washing, as otherwise damages may occur.

6.2 Cleaning the ventilation unit

- Remove any lint that has been sucked into the units during use by switching off the unit and blowing quickly and powerfully into the air outlet. Another option is to use short (approx. 0.5s) bursts from a compressed air canister and applicator straw into the air outlet, with the applicator straw pointed toward the middle of the fan wheel (see photo to right). Lint can also be removed with a vacuum cleaner. To do so, hold the vacuum hose for two brief periods over the intake opening, to prevent damage to the fan.
- The casing of the ventilation unit may only be wiped down with a moist cleaning cloth. Where necessary, standard household detergents may be used to remove tough soiling.

Warning:
Under no circumstances should aggressive or abrasive cleaners or solutions be used for cleaning. Fuels (e.g. gasoline) or alcohols (e.g. spirits) are also not appropriate. These can damage the casing.

When cleaning the unit, be mindful that no moisture penetrates into the device. Along the same lines, be careful when wiping down the unit that no dirt particles penetrate into the small crack between the casing and the power switch. These can impede the function of the ventilation unit.

Ventilation unit does not turn on	Switch not being pressed strongly enough	Press button until you can feel it hit the stopper
	Battery is empty, leading to automatic switch-off	Charge battery
	Battery has gone into deep discharge, charging device no longer can start → malfunctioning ventilation unit	Send ventilation unit for repairs or replacement
	Fan is broken → malfunctioning ventilation unit	
	Electronics are broken → malfunctioning ventilation unit	
	Fan is blocked, e.g. through soiling	Remove blockage
Ventilation unit does not turn off	Button is blocked by foreign particle or soiling	Carefully remove foreign particle or dirt
	Ventilation unit is broken	Send ventilation unit for repairs or replacement
Ventilation unit turns off on its own after extended usage	Not an error, but rather in integrated safety switching → battery is empty	Charge ventilation unit
Ventilation unit turns off on its own after brief use, although the ventilation unit has been charged	Battery has grown old and has only limited storage capacity	Send ventilation unit in for repairs/arrange for battery to be replaced
Ventilation unit unusually loud	Dirt or foreign particle in fan	Carefully remove foreign particle or dirt
	Fan is broken	Send ventilation unit for repairs or replacement
Ventilation unit vibrates unusually strongly	Foreign particle (e.g. lint ball) in fan wheel	Remove contaminant from fan
Very low or no cooling effect can be felt	Ventilation unit improperly inserted into vest pocket	Insert ventilation unit properly (See Chap 4.3)
	Ventilation unit not switched on	Switch on the ventilation units
	Air pathway impeded or blocked	Determine site of problem and remove
	Ventilation unit is broken	Send ventilation unit for repairs or replacement
	Vest is broken	Send vest in for repairs
	Vest is wrong size	Acquire vest in proper size
	Error in wearing of vest	Put on vest properly

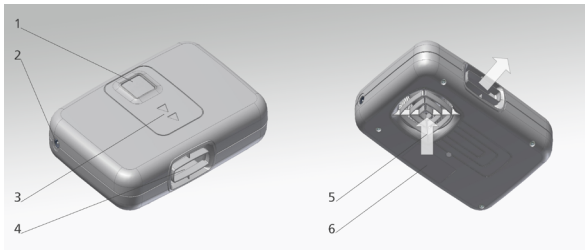
[2] Description and Functionality

2.1 Layout [ventilationVest]

1 Air inlet
2 Width adjuster
3 Forward zipper
4 Right pocket for ventilation unit
5 Marking for on/off button
6 Drawstring with cord stops
7 Air vent
8 Left pocket for ventilation unit
9 3D mesh
10 Care instructions

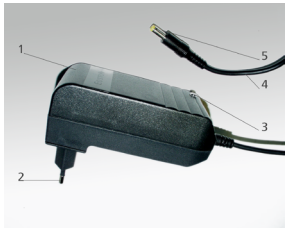
2.2 Layout ventilation units

1 On/Off Switch (Control button)
2 Charge socket
3 Insertion markings
4 Air vent
5 Air inlet
6 Type plate



2.3 Layout charging device

1 Charging Device
2 Power plug
3 Indicator light
4 Power cable
5 Power plug



2.4 Functionality

The **[ventilationVest]** serves to cool anyone forced to work in heat or faced with heavy bodily exertion, or who must wear protective clothing as part of their job, such as heat or cut-retardant clothing (fire fighters, foresters, etc).
The **[ventilationVest]** is a self-contained article of clothing that can either be worn beneath protective clothing or directly as outerwear. The lining of the [ventilationVest] consists of an extremely breathable yet also compression-proof „3D mesh," while the outer material of the vest is airtight. Ventilation units convey air into the **[ventilationVest]** through the vest's air inlets in the neck and sleeve openings. The air is lead into the 3D mesh and flows across the user's upper body. Clothing or equipment worn above the vest will only compress the 3D mesh minimally, meaning that the air flow will be maintained even below items like backpacks.
The **[ventilationVest]** does not prevent the user from forming a sweat by heavy exertion. Yet the ventilation makes it possible for sweaty air to be transported away from the body's surface and replaced with fresh ambient air. Hence the **[ventilationVest]** supports the body's own thermal regulation system by allowing evaporative cooling through drying sweat.
Evaporative cooling is highly efficient and also effective in ambient temperatures far higher than the body's temperature. If the user stops sweating, then the perceptible cooling effect also recedes as soon as the body's surface is dry. This means that the cooling effect regulates itself based on the degree of sweating.
The use of the **[ventilationVest]** in environments with very high air humidity can reduce the cooling effect due to the lowered capacity for moisture absorption.

4.5 Optimal cooling / ventilation

Several factors are important for achieving optimal ventilation / cooling.
The following points are therefore of particularly importance:

- The **[ventilationVest]** must be worn properly (see Chap. 4.1 to 4.3).
- The **[ventilationVest]** may not be too large.
- The zippers on the pockets and the vest's front zipper must always be completely closed during use.
- The ventilation unit must always be pushed completely to the back of the pocket.
- The article of clothing under the vest (shirt or t-shirt) should be as thin as possible, breathable and snug fitting.
- If work or protective clothing is being worn above the **[ventilationVest]**, it is recommended that the collar and sleeves not be too snug, where possible.
- The air outlets on the vest pockets should not be covered.
- The vest's outer materials should always be free from damages.
- The fans in the ventilation unit should always be free of dirt build-up.

[5] Fault messages and Troubleshooting

Fault description	Potential cause	Troubleshooting
Ventilation unit will not charge	Charging unit not properly plugged into the AC power socket	Insert charging device correctly
	No line power	Connect to AC power source
	Ventilation unit not properly connected to charging plug	Insert charging plug correctly
	Malfunction in charging device, charging cable or plug	Send charging device for repairs or swap it out
	Malfunctioning ventilation unit	Send ventilation unit for repairs or swap it out

4.4 Switching on the ventilation units

To turn on the ventilation units, press the control button one time.

Tip:
When turning on the unit, the ideal spot to press is the small “nub” on the control button.

Note:
To prevent incidental pressure from switching the ventilation unit on and off during use, the switch was designed to require a certain amount of force when pressing the button. This stiffness is intended, and not an error.
The switching scheme for the ventilation units is very simple. One press of the button turns the unit on, a second press turns it off again, etc.

[3] Preparation for use – Setup

Prior to being used for the first time, it is important to be aware of proper use, security warnings and the technical data related to the **[ventilationVest]**.
Make certain prior to use that the **[ventilationVest]** system is suitable for use.
Remove the components from the packaging and check that all parts have arrived in complete and perfect condition.

Warning:
Should a ventilation unit or a charging device be damaged, then these components should not be used or charged and/or the charging device should not be connected to the power mains.

3.1 Charging of the ventilation units

Warning:
Be aware of all security warnings (see Chap. 1.2 to 1.4).

Note:
Rechargeable batteries must be charged up prior to first usage. They achieve their full capacity only after around 5 charge and discharge cycles. Batteries that have not been used for extended periods should be recharged prior to use. Batteries lose some effectiveness at temperatures below 10°C / 50°F. Storage at temperatures above 40°C / 104°F can reduce the capacity and service life of a rechargeable battery.

Tip:
The charging device for the **[ventilationVest]** comes with the plug type for your country. A standard commercial adapter plug can be used to charge ventilation units even in countries with other AC power sockets. You do not require another charging device.
To charge a battery, insert the charging device into the plug and connect the ventilation unit with the charging device by sticking the charging plug into the ventilation unit’s charging socket. The indicator light on the ventilation unit from the charging plug. Each recharge lasts up to 3 hours.

Note:
- Ever if the ventilation unit remains connected for an extensive period following the recharge, there is no danger of overcharging. The charging should be conducted at room temperatures between 0°C / 32°F and +45°C / 126°F (optimally +20°C / 68°F) and in dry, dust-free environments protected from direct sunlight.
- Should the situation arise that the **[ventilationVest]** is to remain inactive for an extended period (e.g. several months) following use, then it is advisable not to charge the ventilation unit completely, but rather for only 20-30 minutes prior to storage (see also Chap. 9, technical data → storage)

[4] Operation

4.1 Putting on the vest

Note:
The **[ventilationVest]** should not be worn directly against the skin. The rough structure of the 3D mesh can rub, leading to irritations and scratches on the skin. For this reason some article of clothing (e.g. shirt or t-shirt) should be worn under the vest.

Tip:
The article of clothing under the **[ventilationVest]** should ideally be light (thin), snugly fitting, breathable and capable of absorbing water (sweat). This improves the perceptible cooling effect.

Inspect the **[ventilationVest]** for proper functionality each time before putting it on. Damages (e.g. tears in the outer material) can lead to a significantly reduced cooling effect and should therefore always be resolved in an appropriate manner.

Put on the **[ventilationVest]** like any other vest or jacket. Mind that the article of clothing sits properly on the body.

4.2 Proper position for the vest

The vest is positioned properly when:

- The vest is optimally seated on the upper body. The vest may not be too large.
- The front zipper is closed.
- The width adjuster may be adjusted as needed.
- The drawstring cord is set so that the vest is **tight** around the body in the area of the drawstring.

4.3 Insertion of the ventilation units

The condition of the ventilation units should be tested prior to insertion. The air inlet should be particularly inspected for dirt buildup. Such buildups lead to reduced air intake performance as well as increase noise and, under some circumstances, vibrations. Clean buildup prior to insertion.

- Insert the ventilation units carefully, pushing them in to the back of the pocket.
- Close zipper on pocket.

Note:
It is important that the zipper on the pocket is **completely** closed. Otherwise the ventilation unit can draw in supplementary air, which in turn reduces the overall effectiveness.